Africa Development, Vol. XXX, No.3, 2005, pp. 20–34

(ISSN 0850-3907)

Is There One Science, Western Science?

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Abstract

All humans by nature desire to know and humans are distinguished from the rest of creation by the miracle of knowledge. If all cultures have developed their own forms of knowledge, the spectacular success of a certain form of knowledge, science, notably in the west, has frequently led to its being exclusively attributed to the west. Yet science remains only one of many forms of knowledge and the west only one of its producers. The success of the west has tended to marginalize other forms of knowledge and other contributions to knowledge and, thus to impoverish an otherwise potentially rich and complex world knowledge landscape. It has tended to inhibit or even prevent the development of a really universal, human-knowledge project. Its very success, due essentially to its sustained application to technology, has enabled the development of a false superiority over other forms of knowledge and a real power hegemony of the west over other peoples. The future of lasting peaceful co-existence in the world may depend, in part, on the emancipation of other knowledge modes and forms.

Résumé

De par leur nature, tous les êtres humains éprouvent le désir de savoir, et les humains se distinguent des autres êtres de la Création par le miracle de la connaissance. Bien que toutes les cultures aient développé leurs propres formes de connaissance, le succès spectaculaire, notamment en Europe, d'une forme particulière de la connaissance, la science, a fait que cette dernière a été exclusivement attribuée à l'Occident. Pourtant, la science ne représente qu'une des nombreuses formes de la connaissance et l'Occident n'est qu'un producteur de celle-ci, parmi tant d'autres. Le succès de l'Occident a contribué à marginaliser les autres formes de connaissance et autres contributions à la connaissance, et ainsi, a fini par appauvrir le paysage international de la connaissance, qui autrement, aurait pu être extrêmement riche et diversifié. Ce succès de l'Occident

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a fini par inhiber, voire empêcher le développement d'un projet universel de connaissance humaine. Ce succès, dû essentiellement à l'application continue de la science à la technologie, a contribué à l'instauration d'une pseudo-supériorité de celle-ci sur les autres formes de connaissance, ainsi qu'à l'établissement d'une réelle hégémonie de l'Occident sur les autres peuples. La pérennité d'une co-existence pacifique internationale dépendra, en partie de l'émancipation des autres formes de la connaissance.

Over thirty years ago, while I was writing my doctoral thesis here in Leuven, a thesis incidentally titled: 'Can there be an African Philosophy? A hermeneutical inquiry into the conditions of its possibility', I was concurrently taking lessons in Cultural Anthropology. That course helped to shape the first part of my thesis which was a study of African Culture, the Igbo culture, and was written under the supervision of Prof. E. Roosens. The second and more specifically philosophical part of the work explored how the application of hermeneutics or the radical interpretation of culture was actually what philosophers did. This gave me the clue to a possible way of the creation of philosophies or the doing of philosophy in Africa or elsewhere: Interpreting rather than merely giving ethnographic narrating. My guides for this part of my work where Jean Ladriere and Paul Ricoeur and my conclusions can be summarized this way: Philosophy is nothing more than first, the assumption and then the questioning and critical interpretation of one's culture at the level of ultimacy and finality and of being. Or, put in a different way, it is trying to find answers to the deep questions of meaning and existence posed by and within one's environing culture. And if some people can do it for and from their culture as did Plato and Aristotle for Greek culture or Augustine and Aquinas for Medieval Christianity or Kant and Hegel for Enlightenment Europe, so should others be able to do the same for African or other cultures. It is clear that all philosophy is local and even individual before it can be universal; and nothing can be genuinely universally valid unless it was first authentically personal and inserted within a given culture. If this is the case for Philosophy, it is likely to be the case for human knowledge, since every form of human knowledge must be situated or generated from within a culture or bounded by presuppositions, prejudgments, interests etc. This is the frame of mind that I bring to bear on the question before us: whether there is only one science and whether this is western science.

Explanation of terms–science

To begin with, we shall need to define some of our major concepts, in order to clarify the ambiguities involved in their usage and perhaps, more convincingly present our answer to the double question. Let us take a look at the two

operative words-science and western. These are ambiguous and emotionally charged words invoking intense feelings of partisanship and, for some, even resentment. The etymology of the word 'Science' takes us to the *Latin scientia*. Scientia has been rendered into the next generation of European languages as knowledge, *savoir* and *Wissen*. Even without these terms having precisely one univocal use, even with their dictionary meanings bristling with nuances and synonyms and with a limitless ability for metaphor that makes their connotation all the more elastic and elusive, we can still say in general what Scientia or knowledge is: a special activity or mode of being of man by which man relates to reality from the perspective of the truth, truth here meaning somehow getting at reality as it is. But 'Science' has acquired a history and is no longer an innocent dictionary word generally and vaguely translating the latin scientia. It surely retains this primary meaning coinciding with the activity of the human mind in relation to reality whereby its natural curiosity for the truth is satisfied.

When Aristotle, in the first book of the Metaphysics wrote that 'all men by nature desire to know', he was using the term 'know' in the general, commonsensical understanding of the term, common to the people of his day and culture, to people of our day and apparently to all human beings. This knowledge or science includes acquaintance with, getting into the deep and true meaning of, having familiarity with and getting the real truth about something. But science has also often been restricted to the building of bodies or systems of truth about specified regions of reality, following certain well defined methods of inquiry. But the early Greeks who reflected much on the matter distinguished various forms and levels of knowledge, depending on the type of object known and the aspect under which it was known. Mainly using the phenomenon of CHANGE as criterion, Plato was convinced the only fit object of true knowledge (*episteme*) was the unchanging form or idea, while any consideration of the particular material object of our sense experience could only qualify as opinion (*doxa*). But it was Aristotle who worked out a systematic and comprehensive range of varieties of knowledge, a variety of the objects of knowledge and a variety of the ways of knowing. After distinguishing sensation which is common to man and animals, from knowledge which is man's peculiar activity, he established a list of the many levels of being which would also form the object of knowledge- the non-living, the living, the vegetable world, the animal world, human beings and God. And for each of these levels in the chain of being, he also mapped out the various aspects or headings under which it could be known. In this way he was able to divide the whole area of knowledge into disciplines, some of which he was the first to establish and develop as sciences or systems of

knowledge. By the time these two ancient Greek masters were done, we were left with the idea of science or true knowledge as the knowledge of any level of being in a way that accounts for it. And knowledge accounts fully for its object by knowing all its four causes. This would truly qualify knowledge as science in the higher sense of a system or body of truths, the *scientia rerum per causas*, the knowledge of things through their causes. So far for the second level of the meaning of science.

A third and even more specialized meaning of science was to erupt with the work of Copernicus, Kepler and especially Galileo in the seventeenth century. This is modern science, science in its most restricted sense. It is very narrowly limited both in its subject area and its method of approach. This science, essentially astronomy, physics and chemistry, considers only inanimate matter, bodies or anything with mathematical properties. It considers only quantity and totally discounts the quality of bodies. Galileo himself sets out the basic presuppositions of this science by disregarding non quantifiable entities as merely subjective. He regards them as mere names, citing the famous example of tickling which, however real it is felt to be, cannot have a faculty of tickling because it is non-real, subjective and even illusory. Only elements that yield to measurements and give information on the quantitative aspects of material phenomena are concerned with the real world. Only they relate to the objective world and only they can yield science. This science, without doubt, has been spectacularly successful, especially when applied as technology to bring material well being and to construct useful tools for man's comfort. But by its self-imposed limitations and restrictions, which also mostly explain its huge success, it excludes vast areas of reality, vast areas of possible true knowledge including their corresponding methodologies and it excludes other forms of knowledge.

The 'west' and the 'western'

At this juncture we should say a few words on the other operative term in the title, the West, a word which has become notoriously ambiguous. The simple points of the compass, East and West, have been shifting meaning for ages, perhaps from as early as the decisive battles of Marathon, Thermopylae and Salamis, when the Greek forces repulsed those of the Persian Empire. Perhaps, even earlier, when Europeans first heard of China and India. But when Emperor Constantine established Constantinople as the Eastern Capital of the Roman Empire, he created East versus West as an administrative and political category. Christendom was to divide along the same fault- lines, following the bitter fight for papal supremacy and culminating in the Great Schism, with the East speaking Greek and the West speaking Latin. This ironically left Greece to the East though it had been 'the West' at Marathon.

It also gave a brand new meaning and a religious twist to East and West. As Islam spread from the Middle East (as did Christianity), reaching as far west as Spain and as far east as China and India, somehow, it came to be identified along with Buddhism, Hinduism and Milthraism as Eastern and, once again East and West became yet another level of religious division and polarization. The discovery of the new world, the colonial conquests and missionary expansion even further confused geography, culture and religion. Today, places as far away from Europe and as far apart geographically from each other as North-America and Australia are referred to as Western, though this hardly ever applies to the Navajo of North America or the aborigines of Australia. Then again, the rise of Marxism in the Soviet Union, Eastern Europe and China added ideological, political and economic dimensions to the East/West polarization.

So then which West? With so many dimensions to the term, there is bound to be some overlapping. But it would be fairly correct to say that the west today as it is likely meant to be taken in our title, designates a culture first and then a culture area. This would mean roughly the culture or cultures whose core is the old European, Western Christendom, but stretching backwards historically and spiritually to appropriate Greco-Roman civilization and continuing to the present day into whatever regions of the earth these peoples and cultures have migrated to.

Although we have long been used to such culturally divisive slogans as: East is East and West is West and they shall never meet, recently the use of the term West has tended to become more triumphalistic, jingoistic and exclusionary, conferring bragging rights on some people and buttressing claims of superiority vis à vis the others. Being Western and above all feeling Western seems to have become a way of counting oneself among the 'chosen people', if not the 'master race' itself. Being Western has become a new nationalism, even a new fascism and it may contain all the pitfalls of the old, not excluding intellectual xenophobia. This seems now to apply to science. Starting from the Enlightenment, when the first stories about other, different and stranger peoples and places reached Europe, the new context of contrast and comparison soon portrayed Europeans in better light than their new objects of curiosity. Very soon, this acquired a racist dimension. The West became 'civilized Europe' and the rest of the world, those exotic others discovered by European travellers, became heathens and savages fit only to be conquered and enslaved, colonized and christianised to become civilized. Civilization was now defined in western terms and by western standards. The contribution of the rest of the world to the common pursuit of humanity could be conveniently ignored or quietly co-opted with little or no acknowledgment.

Reason which ultimately would mean humanity itself, virtually became western. Success soon to be defined as military and industrial power and conquest over others only boosted the vaulting hubris and the world was readied for the boastful claims of the Greek miracle in philosophy and now the sole and exclusive possession by the West of the one, unique science in the world.

'Western science': Which level of science?

But what science is this? It certainly can not be what we named earlier as first level science, that is, science as knowledge in general At this first level one may say that science is one and also many. It is one in the sense that all men by nature desire to know. To claim such a prerogative exclusively for one people or culture or to deny it to others would be to disqualify those others from the class of human. All human beings as a matter of fact, somehow do have some knowledge. However, science is also many in the sense that, since such basic knowledge is human activity per excellence, it is also supremely historical in a supremely pluralist world. That is why, as in every human activity, there must be more than one way, in fact many ways of doing it, each human group/culture structuring and colouring its own knowledge according to the specificities of its own environment.

We come now to the next level of knowledge or science. This is science as a systematic or organized knowledge. We are talking now of the age old and ever growing creation of bodies of truth that for centuries has constituted the matter of formal education. Today it is these bodies of knowledge that constitute the disciplines and curricula taught at all levels of learning, primary, secondary and tertiary. To call them bodies of knowledge is the same thing as to say that there is not just one science as insinuated in the title. The very name university says as much. The *universitas studiorum*, the institution for all knowledge, the institution where the matter and business of science is most directly carried on, negates the claim of one unique science. The concept of the universitas studiorum has been predicated on the need to cater for a plurality of sciences serving the promotion, preservation and enhancement of human knowledge. The scientiae which together formed the universitas were understood to be different in their subject matter and often also in their methodology. In his *Kritik der Wissenschaften* given in Hamburg in the winter semester of 1968-1969, Carl Friedrich Freiherr von Weizsaecker gave an overview of every subject or discipline taught at the university. He arranged the sciences in five main groups. The first are Mathematics and the abstract sciences of structure. Second, the sciences of inorganic nature, that is, physics, chemistry, astronomy and the technology deriving from them. Third, the sciences of living beings, zoology, botany and biology. Fourth are the sciences

of man, medicine, psychology, social sciences and law as well as history, philology and language studies. Fifth, the sciences, if they can be so called he says, that treat of the ultimate ground of all these sciences, philosophy and theology.

Western contribution to science

This is the impressive, though by no means the exhaustive roll call of the sciences, a rich but incomplete harvest of human knowledge. It is still growing, as systematic knowledge is being accumulated around an ever increasing portion of the infinite variety that is reality. In assessing this panorama, and contemplating the density of input by square kilometre of the world map, the enormous contribution of the Western tradition can not be overestimated. It actually remains unrivalled. From the schools of Athens through the monastic schools of St Benedict, from the Cathedral schools of Charlemagne to the first of the medieval universities and those of today, a tradition of learning and science has been nurtured and bequeathed to the world, a tradition that constitutes one of the finest achievements of the human spirit. But this acknowledgement is a far cry from reducing all sciences to one or attributing all of it to the west.

Science: Mankind's collective achievement

No one can deny the overwhelming contribution of the west to science so understood. But it would be absurd to suggest that such overwhelming dominance amounted to a monopoly or to discount the contribution of other civilizations or other branches of the human family to science. At least one should remember China and India. At least one should remember ancient Egypt and Babylonia, where, not only early beginnings, but also crucial advances had been made in the sciences and in technology. To remember these cultures, to be aware of their contributions to the beginnings of Astronomy, Mathematics and Medicine as we now know them, should be enough rebuttal of those wild 'we versus them' and 'we alone-know-it-all' claims made in the name of the West. A mathematics, for instance, that has its roots and rudiments in virtually every known human culture, that has been on written record in ancient Egypt and Mesopotamia for millennia, that develops immensely in ancient Greece, gets re-invigorated by medieval, Islamic culture and wins prestige and appreciation from its successful use in the 17th and 18th century physics, attaining its present 'maturity' in 19th century Europe – such a science cannot legitimately be claimed for one culture, western or otherwise. As with mathematics, the story of the rest of the major branches of science has been a continuum. Granted the history and extent of culture borrowings, it can be presumed that every scientific revolution has been a revolution on

an existing state of science, an addition to an already existing and growing legacy of humanity. What humanity knows has been the outcome of all the contributions of all times and cultures. Exclusive claims can only be qualified as usurpation.

Western science as natural science: strengths and weaknesses

We now return to the narrowest meaning of science for which no doubt claims of sole and total ownership are being made on behalf of the West. Is it the only science and is it essentially and wholly Western? One need not dispute its mainly western origin from Galileo through Newton and Descartes. Neither would any one doubt the successful application of this science in spectacular ways to lighten the drudgery of life. What characterizes it however is its narrow focus, a restrictive definition of both its object and its method, restricting itself essentially to a fraction of the vast subject matter of knowledge as well as to a fraction of the many ways of human knowing. This exclusive concentration of focus has contributed to the great success of modern science, but this success has been ambiguous at best and, for some, it has been a human tragedy. 'Science' in the form of technology has been extremely successful. It has made possible a revolution in man's living environment, liberating him from drudgery and saving time and energy for leisure and comfort. By unleashing the enormous potential of man as tool maker, it is realizing the ambitions of mythologies from Icarus to Faustus, the dreams of fairy tales and the marvels of magicians and alchemists through history. In making dreams reality, science has proven to be the most effective means to procure the most effective tools and toys for improving the material condition of man. But in the process it has become more a science for the materially useful and less the science in quest of the true, a know-how rather than a knowledge. Thus in so restricting itself, it has become less than itself.

Moreover, when science fashions such dreadful efficiency to serve an agenda of power, (consider Hiroshima or the depleted Ozone layer, or the scientific-military-industrial complex), the avowed purpose of dominating nature easily turns into the domination of fellow men and ethical problems of enormous proportions may arise, problems to which science has no clue, much less an answer, since quantity, not man or society or values have formed its alpha and omega. Such Science becomes a failure if it cannot master its own ambiguities or control its own home-made Frankensteins. In that way, the very future of mankind could be and may have been irreversibly compromised. Further more in pursuing this successful experiment, Science has one-sidedly privileged a form of knowing, at the same time devaluing other complementary and necessary forms of knowledge. It is well known that a certain 'physics envy' has affected many sciences, including those like

the human sciences, with not the remotest affinity to physics, as they ape its warped methodology in other to attain something of its success.

In all this, the looser is man the knower himself, as the 'know thyself' of Socrates, the 'what shall I do?' and the 'what may I hope for' of Kant remain unheeded as advice and irrelevant as questions in Science. In short, Science has been most impressive in dealing with inanimate matter, less satisfactory in handling life, but totally and woefully incapable of explaining purpose or values or spirit or mind or beauty or good and evil, those very realities it refuses as reality but which most deeply concern and really define man as man. Science has rather too successfully pushed the empiricist/materialist agenda and, on the wings of its brilliant success, is helping to globalise a less than global view of the world and reality.

Such success has empowered science or rather promoted the merger of knowledge and power. It has enabled Western science not only to impose and maintain the power of the West over other peoples, but to threaten the knowledge of other peoples with extinction. The marginalisation of other people and the inferiorization and devaluation of their dignity and humanity has gone hand in hand with the disqualification of their knowledge systems and are in turn cited as proof of the supremacy of western Science and as guarantee of Western domination. It was with the disqualification of other knowledge systems that the ground was cleared for the claims of the West being the sole possessors of the solely valid knowledge of all time, for all men of all cultures. This sounds too much like being and acting as the only remaining knowledge super power in the world.

Critique of science

Thomas Kuhn has done the world a great service in helping to demythologise western science and to debunk some of the arrogant claims made on its behalf. By objectively delineating the route to normal science and the nature of modern science, he has drawn attention to the roads not travelled. He has highlighted the role of paradigms in directing the process of scientific work and in foreclosing and modifying the results of science. He has deflated the idea of linear progress in science and has painted a realistic picture of the march of science as something more limited, more tentative, more ambiguous. To be able to make such claims one is likely to have forgotten the roots, the routes and the rooted-ness of science, thinking to have a science that is the result of pure reason, timeless and placeless and without any baggage of cultural prejudice, a pure science in quest of pure truth, pursued without any interest, without any presuppositions, sine ira et studio. Such a history-less science could only be an absolute science of which none would be capable but God himself.

A critical history of modern science would need to point out that:

1. It is fatally flawed or at least insufficiently equipped as the one form of knowledge that is valid for all mankind and adequate for all of reality.
2. This incompleteness and inadequacy suggest that science must have to accommodate 'other sciences' or forms of knowledge and other knowledge traditions. It is high time that those other traditions and forms of knowledge cease being marginalized so that the defaults of modern science may be corrected and important lacunae filled.
3. The knowledge hegemony of western science, in so far as it claims universal validity, has been punctured even from within. If neither physics, which is the modern science par excellence, nor mathematics, the perfect and basic science, can now speak with one authoritative voice, since they are known to harbour their own internal contradictions and have shed their earlier aura of exactness, infallibility, universality and necessity, then the ground should be clear for a healthy and much needed pluralism in science.
4. The knowledge traditions of other cultures, long driven underground by the powerful western behemoth should be revived and an effort should be made to let the world's knowledge systems bloom together, to enrich, correct, cross pollinate and complement each other for the good of mankind.

Other knowledge traditions

In this connection we have mentioned the ancient civilizations of Egypt and Mesopotamia, and of India and China as cradles of Science. Many other contemporary, non-western cultures have written records of their knowledge traditions. But what of the many, cultural traditions that have preserved no written records? What of the poor, illiterate sub-Saharan Africans? Should their knowledge traditions, if they exist at all, be taken seriously? We know what a barrier mass illiteracy has created for these civilizations. But if we grant that written records help immensely in preserving and handing over knowledge, we know also that, of them selves, they do not create knowledge. Formal education is also a great advantage, but living traditions of informal education have their own advantage. If we grant also that the degree of 'scientificness' will always be debatable and, even when settled, will still be variable, there is no doubt that these peoples do have their own science or bodies of knowledge. For one thing, a science like medicine will have to be taken for granted as a genuine science native to every culture in history.

Since disease has been universal throughout history, so also has been the science of curing and healing, involving diagnosis and the knowledge of herbs, potions, lotions and their potency. Any group of humans that has so far survived as a group could have done so only thanks to a science of medicine. The science of agriculture must also be as universal. The complex process of coordinating the knowledge of soils, of weather and climate, of crop types and seasons of planting, tending and harvesting can not demand of anything less than a sure grasp of systematic knowledge of these matters. Other sciences have flourished in one area or time or the other, often circulating within a secret society. Some people developed knowledge and expertise in metallurgy, others in mathematics; some have specialized in rain-making others in astronomy. In many African cultures the greatest emphasis was laid not on the sciences of nature or on those of inanimate matter but on the sciences of man, especially as chronicled in philosophical wisdom and more especially in ethics. Instead of paying so much attention to nature, the Igbo knowledge tradition has been rather heavily anthropocentric, man-concerned and man-oriented.

The validity of Igbo medicine

Igbo local knowledge as in medicine, avoids the analytic abstraction which is the hallmark of western-based science and epistemology. In this medical science, the sum of the parts is not necessarily equal to the whole. The human being is not just equal to all his component atoms or molecules or even his anatomy and physiology. This is why the inadequacies of western medicine as practiced in Igbo land stem not only from its exorbitant costs or its totally foreign theoretical basis, but especially from its 'body-parts' approach to healing. An Igbo man jokingly remarked of a fellow ailing Nigerian octogenarian who frequently travelled overseas for treatment, that he seemed to have a specialist doctor for every single part of his body. The criticism of the old man implied a criticism of western medical science which fails to see the patient as integer and tries to cure him in fractions. Due to its inherent materialist and reductionist philosophy, Western medicine sees man as simply his material body and a sick man as merely a sick body; it totally ignores or fails to view together as a complex whole, the psychological, social, spiritual and even moral dimensions of the one to be made whole (healed). The so-called quacks of African medicine may have their faults, but it is not that of failing to see the wood for the trees. It may consist in their inability to reduce a complexity to a single-name disease, but part of their own success is their power to see in a given illness many more forces at work in the patient than germs or microbes. Or it may be simply due to their reliance on a cosmology populated with a multitude of micro and macro forces, visible and invisible,

natural, preter-natural and super-natural, creating a disease etiology more credible and effective because more comprehensive than western medical practice. The difference is clearly a difference of world views, each of which supports a certain science of medicine.

The example of medicine is typical, but it was not just local medicine that was devalued by the knowledge arrogance that came with colonization. Local arts and technology were criminalized into extinction. The local brewing technology was outlawed for producing what was officially labelled 'illicit gin'. Local languages were ashamed of themselves as they were banned from the schools and attracted sanctions if they were ever used in school. This colonial policy had the effect of producing local educated speakers learned and fluent in English but who were illiterate in their own languages, languages which they had been brought up to despise. These were considered inherently unsuited for 'scientific' work and a drag on progress and modernization.

In the last decade or so, Nigeria on which English was imposed as a lingua franca, has also undertaken the program of decimalization of numbers and measurements. Already the earlier imposition of the British weights and measures had caused great confusion in the study of mathematics and engineering and for ordinary folk, a nightmare in transacting a bizarre currency system. But all of this imposition totally ignored a prior existing, indigenous, pre-colonial system of numeracy long in use throughout Igbo land. This system with 20 as base, was capable of dealing with any level of high numbers and could have formed the basis of an indigenous arithmetical system. But its use has been banned by official fiat and its gradual loss of relevance among the ordinary folk may lead eventually to some form of extinction. Such cultural imperialism has led to that colonization of the mind so often complained about, which is still at work today, contributing to a certain scientific underdevelopment.

There is only one science, western science

The notion that there is only one science, western science is pure dogma, a dogmatic belief supported by purely ideological positions, some stated, others not. Some such positions are 'we are Westerners and we have it while non-Westerners do not', although we have seen that being Western has not been a consistent tag of identity. 'The whole of nature is only matter and it is fully rational, that is to say, mathematizable. Science can mean only one thing: the study of matter and its quantity, operating with exact measurements', though we know that science should in principle, exclude no part of reality (cf. the Renaissance title of a book: *De omni re, scitu et scibili et de quibusdam aliis)*. 'Science is always true, its results exact, necessary and universal' – though if this is so, only God would have such science or else one would

have to deny the bounded, situated and perspectivist nature of human knowledge. 'Science is always progressive, advancing irreversibly in linear fashion from a less perfect to a more perfect status', though this would contradict its avowed quality of being always true and infallible, with nothing to correct or improve.

Luckily today, after decades of self analysis and criticism, modern science is renouncing some of its wild claims and has become more humble. After Thomas Kuhn there is hardly any more belief in the linear crescendo of progress in science. After Riemann and Gauss, Lobachevsky and Bolyai, science no more believes in one unique Geometry but rather in a number of geometries. After Heisenberg, rigid, doctrinaire determinism has been replaced by indeterminacy and there are no more claims of a Science of exact certainties valid for all reality. After Karl Popper we now acknowledge the possibility of error in science. After a decade of a hermeneutics of Natural Science, a consensus is building up that: a) scientific knowledge is socially constructed, constructed by cultures, world views, locations, problems, dreams, resources, instruments and representations (J.H. Fujimura 1998). b) Science should be aware that it is necessarily partial in the representation of its objects and a full account of reality would include every perspective. It should be wary of flaunting credentials of objectivity, neutrality, transparency and universality (Sarah Franklin). Nor should Science c) see itself as superior to alternative epistemologies or scoff at indigenous knowledge systems as nonsensical, superstitious, irrational or mythical (Lorry Ann Trupp 1989). And with the self criticism now part of Science and especially of Anthropology has come an admission that other cultures and other peoples may have credible knowledge systems.

Towards a pluralistic and complementary world science

After the demise of these discredited ideological positions, one needs only to consider a few facts to invoke the possibilities for science suggested by the world around us which is the object of all human knowledge. Consider the richness of the world's knowledge traditions based not only on the world's human riches but also on the variety which reflects the diversity of man's environment and his ways of adapting to it. Consider the richness of the subject matter of knowing dictated and suggested by the infinite wealth of beings and things and facts in the universe, the different flora and fauna, affecting all human situations and needs, bodily, emotional and spiritual. Consider all the why and how questions arising from both nature and culture and the infinite variety and permutations of possibilities that human creativity could think up. All this not only suggests, but actually has elicited already a variety of knowledge forms and traditions.

So is there only one science and is it only western science?

Perhaps a good answer would be found by trying to ask and honestly answer similar questions, such as: Is there one Music and is it Western music? Is there one Philosophy and is it Western philosophy? And one could formulate the same question with regard to Theology, Mythology, History, Architecture, Medicine and Religion. The only answer that would not be absurd has to be in the negative.

What can be done to be true both to Knowledge/science and to humanity? The First step to take, especially if one wants to generalize about humanity, is to acquaint oneself with humanity in all its plural manifestations as cultures around the globe. Knowledge of other cultures can only impress a bona fide student of man and imbue him with respect for the variety of ways man has modified, adapted to or otherwise used his environment. Respect for this rather than a self-centred reading of history, respect for man and for pluralism in a many sided world and reality, that is the key to saving our world from the type of dangerous ignorance our title seems to portray. A dialogue or a debate, an interaction or even a mere peaceful, non-threatening juxtaposition of cultures and knowledge systems has been advocated. If for instance some of the knowledge traditions of non-western societies could be given more exposure either by getting recorded and published or by being exposed to university level research and teaching, they might get the needed boost. Any of this should be possible and probably some of it is already at work. Incidentally, many of us are already living out such a dialogue in our personal lives. Many an African, Asian or third world scholar or elite has been, in their person, the unwitting theatre of moral and cultural battles, the confluence of several cultural, ideological and spiritual currents flowing notably from Western culture and their own traditional culture. They have therefore been learning to blend at least two knowledge traditions, now threading gingerly between them, now opting to follow one path rather the other. The often uneasy co-existence of heterogeneous and conflicting currents, systems or ideas in one individual is marked by the powerful pull of the Western element, amply validated by the undeniable material benefits and marvels of Western techno-science. But there also remains a powerful pull to the other side, often just a suspicion that all is not right 'on the Western front' and a sense of incompleteness or even hollowness in its impressive and glittering artificiality. Then again one sees something valid and compelling in the indigenous knowledge system, an insight, a value 'that never was met elsewhere'. If we can personally marry or reconcile these tensions within us, and some of us do, some lessons might yet be learned for science and for mankind and for the integration of the sciences of mankind.

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